

1 WHAT IS CLAIMED IS:
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3 1. An anti-adhesion patch, comprising:
4 a collagenous material; and
5 at least one non-living cellular component.
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7 2. The anti-adhesion patch of claim 1, wherein said collagenous material is collagen
8 type I or a combination of collagen type I and a co-component.
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10 3. The anti-adhesion patch of claim 2, wherein said co-component is selected from
11 the group consisting of elastin, interstitial collagens, collagen type III, V and IX, glycoproteins
12 and proteoglycans.
13

14 4. The anti-adhesion patch of claim 1, wherein said collagenous material is from a
15 natural source or a recombinant source.
16

17 5. The anti-adhesion patch of claim 1, wherein said non-living cellular component is
18 from a natural source or a recombinant source.
19

20 6. The anti-adhesion patch of claim 5, wherein said non-living cellular component
21 from a natural source is human connective tissue cell.
22

23 7. The anti-adhesion patch of claim 6, wherein said human connective tissue cell is a
24 fibroblast cell or a vascular smooth muscle cell.
25

26 8. The anti-adhesion patch of claim 7, wherein said fibroblast cell is a dermal
27 fibroblast cell.
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29 9. The anti-adhesion patch of claim 5, wherein said non-living cellular component
30 from a recombinant source is an engineered cell.
31

32 10. A method of constructing an anti-adhesion patch, comprising the steps of:
33 (a) mixing human connective tissue cells with a collagenous material;
34 (b) incubating the resulting mixture in a matrix organization medium to
35 stimulate the cells to adapt to and organize the collagenous material into a mono-cellular tissue
36 equivalent having desirable dimensions and mechanical properties;

1 (c) treating the tissue equivalent to eliminate the cells; and
2 (d) confirming the absence of viable cells in the tissue equivalent after the
3 treatment, wherein said tissue equivalent may be used as an anti-adhesion patch.
4

5 11. The method of claim 10, wherein said collagenous material is in an acid solution
6 and first neutralized at 4°C before the mixing step.
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8 12. The method of claim 11, wherein said acidic solution is hydrochloric solution.
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10 13. The method of claim 10, wherein said human connective tissue cell is a fibroblast
11 cell or a vascular smooth muscle cell.
12

13 14. The method of claim 13, wherein said fibroblast cell is a dermal fibroblast cell.
14

15 15. The method of claim 10, wherein said collagenous material is collagen type I or a
16 combination of collagen type I and a co-component.
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18 16. The method of claim 15, wherein said co-component is selected from the group
19 consisting of elastin, interstitial collagens, collagen type III, V and IX, glycoproteins and
20 proteoglycans.
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22 17. The method of claim 10, wherein said collagenous material is from a natural
23 source or a recombinant source.
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25 18. The method of claim 10, wherein said matrix organization medium contains fetal
26 bovine serum.
27

28 19. The method of claim 10, wherein said matrix organization medium is a serum-
29 free cocktail of growth factors selected from the group consisting of fibroblast growth factor
30 (FGF), epidermal growth factor (EGF), platelet derived growth factor (PDGF), transforming
31 growth factor beta (TGF β) and a mixture thereof.
32

33 20. The method of claim 19, wherein said cocktail of growth factors are in the
34 presence of growth promoters.
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1 21. The method of claim 20, wherein said growth promoter includes transferrin and
2 insulin.

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4 22. The method of claim 10, wherein the cell-elimination treatment includes nutrient
5 deprivation, antibiotics treatment and anti-mitotics treatment.

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7 23. The method of claim 22, wherein said antibiotics includes puromycin,
8 amphotericin and mitomycin.

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10 24. The method of claim 22, wherein said anti-mitotics is 5-fluorouracil.

11
12 25. A method for preventing tissue adhesions between organs and other tissues being
13 operated upon during surgical procedures, comprising the step of:
14 attaching an anti-adhesion patch to one of the surfaces of the tissues being
15 operated upon, wherein said anti-adhesion patch comprises a collagenous material and at least
16 one non-living cellular component, wherein said anti-adhesion patch participates in formation of
17 adhesion and is biodegradable during the recovery.

18
19 26. The method of claim 25, wherein said tissue being operated upon is a heart.

20
21 27. The method of claim 25, wherein said anti-adhesion patch is attached to the
22 traumatized tissues using a tissue glue.

23
24 28. The method of claim 27, wherein said tissue glue is a fibrin tissue glue or another
25 type of bio-adhesive.

26
27 29. The method of claim 28, wherein said another type of bio-adhesive is Nitinol
28 Coupler.